In the Claims:

Claims 1 to 15 (Cancelled).

16. (Currently Amended) A method for compressing a digital image comprising a matrix of elements, each element comprising a plurality of digital components of different types for representing a pixel, the method comprising:

determining at least one energy measure of the digital image;

estimating a gain factor as a function of the at least one energy measure, the function being determined experimentally according to a target compression factor;

splitting the digital image into a plurality of blocks, and calculating for each block a group of discrete cosine transform (DCT) coefficients for the digital components of different types; and

quantizing the DCT coefficients for each block using a corresponding quantization table scaled by ~~a~~ the gain factor for ~~determining a~~ achieving the target compression factor;

wherein determining the at least one energy measure comprising receiving the plurality of digital components, and calculating the at least one energy measure in a pixel domain using the plurality of digital components.

~~determining at least one energy measure of the digital image; and~~

~~estimating the gain factor as a function of the at least one energy measure, the function being determined experimentally according to the target compression factor.~~

17. (Previously Presented) A method according to

Claim 16, wherein each group of DCT coefficients comprises at least one direct current (DC) coefficient and a plurality of alternating current (AC) coefficients; and wherein estimating the gain factor comprises:

estimating a first number of bits required to encode the AC coefficients of all the blocks using the quantization tables scaled by a pre-set factor as a first function of the at least one energy measure, the first function being determined experimentally according to the target compression factor;

calculating a second number of bits required to encode the DC coefficients of all the blocks using the quantization tables scaled by the pre-set factor;

estimating a basic compression factor provided by the quantization tables scaled by the pre-set factor according to the first number of bits and the second number of bits; and

estimating the gain factor as a second function of the basic compression factor, the second function being determined experimentally according to the target compression factor.

18. (Previously Presented) A method according to Claim 17, wherein the first function is a linear function and the second function is a quadratic function.

19. (Previously Presented) A method according to Claim 17, wherein estimating the basic compression factor comprises:

estimating a third number of bits required to encode control values according to a number of elements of the

digital image; and

dividing a sum of the first, second and third number of bits by the number of elements of the digital image.

20. (Previously Presented) A method according to Claim 17, further comprising:

storing a plurality of sets of parameters representing the second function, each set of parameters being associated with a corresponding value of the target compression factor;

selecting an image quality and determining a current value of the target compression factor as a function of the selected image quality; and

reading the parameters associated with the current value of the target compression factor for estimating the gain factor.

21. (Previously Presented) A method according to Claim 17, wherein the pre-set factor is determined experimentally according to the target compression factor.

22. (Previously Presented) A method according to Claim 16, wherein each element of the digital image comprises a luminance component, a first chrominance component, and a second chrominance component.

23. (Previously Presented) A method according to Claim 22, wherein the at least one energy measure comprises a total energy measure equal to a sum of an energy measure of the luminance components, an energy measure of the first

chrominance components and an energy measure of the second chrominance components.

24. (Previously Presented) A method according to Claim 23, wherein determining the at least one energy measure for each type of component comprises:

calculating a horizontal Sobel image and a vertical Sobel image by a convolution of the elements of the digital image comprising a type of component with a horizontal mask and a vertical mask, respectively;

calculating a total Sobel image by summing the horizontal Sobel image and the vertical Sobel image; and

summing an absolute value of each element of the total Sobel image.

25. (Previously Presented) A method according to Claim 24, wherein at least one quantization table is asymmetric along a horizontal direction and a vertical direction, the method further comprising multiplying the Sobel image associated with the at least one quantization table by a correction factor for compensating the asymmetry of the corresponding quantization table.

26. (Previously Presented) A method according to Claim 16, further comprising:

providing an incomplete digital image with at least one component missing in each element;

obtaining the digital image from the incomplete digital image;

storing the digital image in a memory and

concurrently performing the determining of the at least one energy measure and the estimating of the gain factor; and

reading the digital image from the memory for performing the splitting of the digital image and the quantizing of the DCT coefficients.

27. (Previously Presented) A method according to Claim 16, further comprising:

providing an incomplete digital image with at least one component missing in each element;

obtaining the digital image from the incomplete digital image for performing the determining of the at least one energy measure and the estimating of the gain factor; and

obtaining the digital image from the incomplete digital image again for performing the splitting of the digital image and the quantizing of the DCT coefficients.

28. (Currently Amended) A method for compressing a digital image comprising a matrix of elements, each element comprising a plurality of digital components of different types for representing a pixel, the method comprising:

determining at least one energy measure of the digital image;

estimating a gain factor as a function of the at least one energy measure by

estimating a first number of bits required to encode the AC coefficients of all the blocks using the quantization tables scaled by a pre-set factor as a first function of the at least one energy measure,

calculating a second number of bits required to encode the DC coefficients of all the blocks using the quantization tables scaled by the pre-set factor,

estimating a basic compression factor provided by the quantization tables scaled by the pre-set factor according to the first number of bits and the second number of bits, and

estimating the gain factor as a second function of the basic compression factor;

splitting the digital image into a plurality of blocks, and calculating for each block a group of discrete cosine transform (DCT) coefficients for the digital components of different types, each group of DCT coefficients comprising at least one direct current (DC) coefficient and a plurality of alternating current (AC) coefficients; and

quantizing the DCT coefficients for each block using a corresponding quantization table scaled by ~~a~~ the gain factor for determining a target compression ~~factor;~~ factor;

wherein determining the at least one energy measure is performed in a pixel domain using the plurality of digital components.

~~determining at least one energy measure of the digital image; and~~

~~estimating the gain factor as a function of the at least one energy measure by~~

~~estimating a first number of bits required to encode the AC coefficients of all the blocks using the quantization tables scaled by a pre-set factor as a first function of the at least one energy~~

~~measure,~~

~~calculating a second number of bits required to encode the DC coefficients of all the blocks using the quantization tables scaled by the pre-set factor,~~

~~estimating a basic compression factor provided by the quantization tables scaled by the pre-set factor according to the first number of bits and the second number of bits, and~~

~~estimating the gain factor as a second function of the basic compression factor.~~

29. (Previously Presented) A method according to Claim 28, wherein the first and second functions are determined experimentally according to the target compression factor.

30. (Previously Presented) A method according to Claim 28, wherein the first function is a linear function and the second function is a quadratic function.

31. (Previously Presented) A method according to Claim 28, wherein estimating the basic compression factor comprises:

estimating a third number of bits required to encode control values according to a number of elements of the digital image; and

dividing a sum of the first, second and third number of bits by the number of elements of the digital image.

32. (Previously Presented) A method according to Claim 28, wherein each element of the digital image comprises a luminance component, a first chrominance component, and a second chrominance component.

33. (Previously Presented) A method according to Claim 32, wherein the at least one energy measure comprises a total energy measure equal to a sum of an energy measure of the luminance components, an energy measure of the first chrominance components and an energy measure of the second chrominance components.

34. (Previously Presented) A method according to Claim 33, wherein determining the at least one energy measure for each type of component comprises:

calculating a horizontal Sobel image and a vertical Sobel image by a convolution of the elements of the digital image comprising a type of component with a horizontal mask and a vertical mask, respectively;

calculating a total Sobel image by summing the horizontal Sobel image and the vertical Sobel image; and

summing an absolute value of each element of the total Sobel image.

35. (Currently Amended) A device for compressing a digital image comprising a matrix of elements, each element comprising a plurality of digital components of different types for representing a pixel, the device comprising:

energy means for determining at least one energy measure of the digital image;

estimation means for estimating the gain factor as a function of the at least one energy measure, the function being determined experimentally according to the target compression factor;

discrete cosine transform (DCT) means for splitting the digital image into a plurality of blocks, and calculating for each block a group of coefficients for the digital components of different types;

quantization means connected to said DCT means for quantizing the DCT coefficients for each block using a corresponding quantization table scaled by ~~a~~ the gain factor for achieving a target compression factor;

said energy means determining the at least one energy measure in a pixel domain using the plurality of digital components.

~~energy means for determining at least one energy measure of the digital image; and~~

~~estimation means for estimating the gain factor as a function of the at least one energy measure, the function being determined experimentally according to the target compression factor.~~

36. (Previously Presented) A device according to Claim 35, wherein said DCT means and said quantization means define a compression unit; wherein said estimation means comprises a processor for controlling compression of the digital image; the device further comprising:

a memory for storing the quantization tables; and

communication means for connecting said compression unit, said memory, said energy means and said processor

together, said processor estimating the gain factor based upon a program stored in said memory.

37. (Previously Presented) A device according to Claim 35, wherein each group of DCT coefficients comprises at least one direct current (DC) coefficient and a plurality of alternating current (AC) coefficients; and wherein said estimation means is for:

estimating a first number of bits required to encode the AC coefficients of all the blocks using the quantization tables scaled by a pre-set factor as a first function of the at least one energy measure, the first function being determined experimentally according to the target compression factor;

calculating a second number of bits required to encode the DC coefficients of all the blocks using the quantization tables scaled by the pre-set factor;

estimating a basic compression factor provided by the quantization tables scaled by the pre-set factor according to the first number of bits and the second number of bits; and

estimating the gain factor as a second function of the basic compression factor, the second function being determined experimentally according to the target compression factor.

38. (Previously Presented) A device according to Claim 37, wherein the first function is a linear function and the second function is a quadratic function.

39. (Previously Presented) A device according to

Claim 37, wherein said estimation means for estimating the basic compression factor is further for:

estimating a third number of bits required to encode control values according to a number of elements of the digital image; and

dividing a sum of the first, second and third number of bits by the number of elements of the digital image.

40. (Previously Presented) A device according to Claim 35, wherein each element of the digital image comprises a luminance component, a first chrominance component, and a second chrominance component.

41. (Previously Presented) A device according to Claim 40, wherein the at least one energy measure comprises a total energy measure equal to a sum of an energy measure of the luminance components, an energy measure of the first chrominance components and an energy measure of the second chrominance components.

42. (Previously Presented) A device according to Claim 41, wherein said energy means is for:

calculating a horizontal Sobel image and a vertical Sobel image by a convolution of the elements of the digital image comprising a type of component with a horizontal mask and a vertical mask, respectively;

calculating a total Sobel image by summing the horizontal Sobel image and the vertical Sobel image; and

summing an absolute value of each element of the total Sobel image.

43. (Previously Presented) A digital still camera comprising:

an image acquisition unit for transmitting light corresponding to an image of scene;

a sensor unit connected to said image acquisition unit for providing a digital image of scene, the digital image comprising a matrix of elements, each element comprising a plurality of digital components of different types for representing a pixel; and

a control device for compressing the digital image and comprising

a discrete cosine transform (DCT) circuit for splitting the digital image into a plurality of blocks, and calculating for each block a group of discrete cosine transform (DCT) coefficients for the digital components of different types,

a quantization circuit connected to said DCT circuit for quantizing the DCT coefficients for each block using a corresponding quantization table scaled by a gain factor for achieving a target compression factor,

an energy circuit for determining at least one energy measure of the digital image, and

a processor for estimating the gain factor as a function of the at least one energy measure, the function being determined experimentally according to the target compression factor.

44. (Previously Presented) A digital still camera

according to Claim 43, wherein said DCT circuit and said quantization circuit define a compression unit; the device further comprising:

a memory for storing the quantization tables; and

a communication bus for connecting said compression unit, said memory, said energy circuit and said processor together, said processor estimating the gain factor based upon a program stored in said memory.

45. (Previously Presented) A digital still camera according to Claim 43, wherein each group of DCT coefficients comprises at least one DC coefficient and a plurality of AC coefficients; and wherein said estimation circuit is for:

estimating a first number of bits required to encode the AC coefficients of all the blocks using the quantization tables scaled by a pre-set factor as a first function of the at least one energy measure, the first function being determined experimentally according to the target compression factor;

calculating a second number of bits required to encode the DC coefficients of all the blocks using the quantization tables scaled by the pre-set factor;

estimating a basic compression factor provided by the quantization tables scaled by the pre-set factor according to the first number of bits and the second number of bits; and

estimating the gain factor as a second function of the basic compression factor, the second function being determined experimentally according to the target compression factor.

46. (Previously Presented) A digital still camera according to Claim 45, wherein the first function is a linear function and the second function is a quadratic function.

47. (Previously Presented) A digital still camera according to Claim 45, wherein said estimation circuit for estimating the basic compression factor is further for:

estimating a third number of bits required to encode control values according to a number of elements of the digital image; and

dividing a sum of the first, second and third number of bits by the number of elements of the digital image.

48. (Previously Presented) A digital still camera according to Claim 43, wherein each element of the digital image comprises a luminance component, a first chrominance component, and a second chrominance component.

49. (Previously Presented) A digital still camera according to Claim 48, wherein the at least one energy measure comprises a total energy measure equal to a sum of an energy measure of the luminance components, an energy measure of the first chrominance components and an energy measure of the second chrominance components.

50. (Previously Presented) A digital still camera according to Claim 49, wherein said energy circuit is for:

calculating a horizontal Sobel image and a vertical Sobel image by a convolution of the elements of the digital image comprising a type of component with a horizontal mask

and a vertical mask, respectively;

calculating a total Sobel image by summing the horizontal Sobel image and the vertical Sobel image; and

summing an absolute value of each element of the total Sobel image.